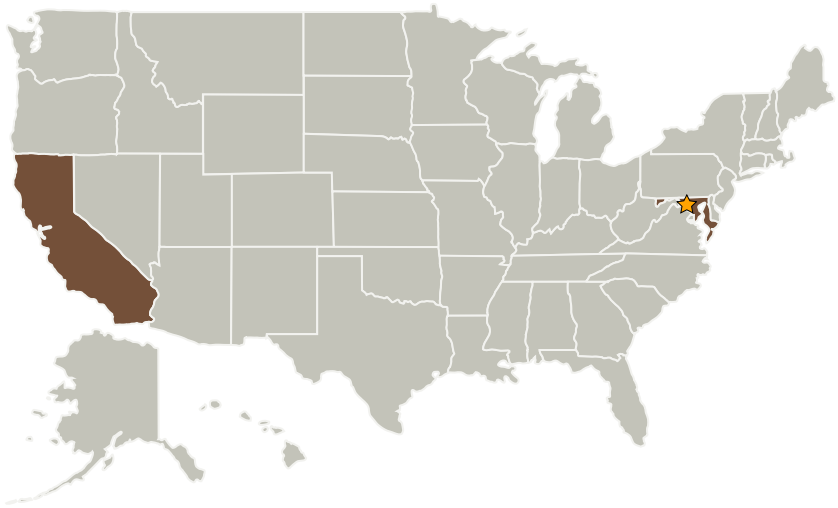
Micro-Channel Embedded Pulsating Heat Pipes, Phase I

Completed Technology Project (2006 - 2006)

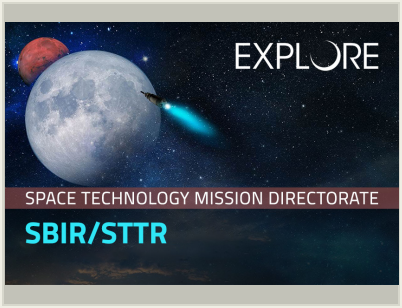
Project Introduction

As the need for thermal control technology becomes more demanding Micro-Channel Embedded Pulsating Heat Pipes (ME-PHPs) represents a sophisticated and enabling solution. Currently laboratory tests indicate that a magnitude jump in thermal conductivity can be expected with ME-PHPs over conventional materials like aluminum and copper. ME-PHPs will give NASA and the spacecraft community a powerful tool for the thermal control of instruments, detectors, lasers, communication systems, MEMS and power systems. Especially those requiring tight thermal control to the micro Kelvin levels. By embedding heat pipes within a plane of a sheet or plate the heat exchanging media can be placed as close as physically possible to the warm source thus maintaining the narrowest possible temperature gradient. The thermal energy can then be easily transported to any other area within the plane of the sheet for dissipation purposes. ME-PHPs are stackable and scalable to any thermal load requirement.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
The Peregrine Falcon Corporation	Supporting Organization	Industry	Pleasanton, California



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations	
California	Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.2 Thermal Control Components and Systems
    - TX14.2.3 Heat Rejection and Storage